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WATER-QUALITY DATA FROM SELECTED SURFACE COAL MINES IN WEST VIRGINIA

by Robert L. Bragg

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ABSTRACT

Drainage from 57 sites in West Virginia, representing unmined areas, reclaimed surface-mined areas, and active surface-mining areas that were free of deep-mine influence were sampled during the spring and summer (wet and dry seasons) of 1984. Sample sites were selected to represent the major coal-producing areas of the State, three types of surface mining (area, contour, and mountaintop), and seven different geological groups or formations. Field data measured at each site included streamflow volume, specific conductance, pH, alkalinity, acidity, and water temperature. Water samples were collected and analyzed in the laboratory for major inorganic constituents and selected metals.

INTRODUCTION

West Virginia is one of the leading coal-producing states in the United States. Coal production in 1980 was about 105 million tons, of which approximately 23 million tons (22 percent) were mined from 925 surface mines. Drainage from surface-mined areas can be acidic and can contain large concentrations of dissolved minerals. This drainage may then flow into streams and lower the quality of water in the streams by increasing the dissolved mineral content.

This report is a compilation of the data collected for a study of the nature, variability, and magnitude of mineralization of drainage from unreclaimed, reclaimed, and active surface coal mines in West Virginia. Fifty-seven sites were selected to represent different mining practices (contour, mountaintop, and area) and natural conditions in the different geologic groups and formations of the State. Two sites were selected in the Dunkard Group, 6 in the Monongahela Group, 5 in the Conemaugh Group, 10 in the Allegheny Formation, 8 in the Kanawha Formation, 8 in the New River Formation, and 6 in the Pocahontas Formation. Twelve additional sites were selected that represented more than one group or formation or unmined sites that represent natural conditions.

Drainages were measured and sampled in the spring and summer of 1984--the wet and dry seasons. Field measurements were made of flow volume, pH, specific conductance, air and water temperatures, and alkalinity or acidity. A water sample was collected at each site for laboratory analysis to determine major inorganic and selected metal concentrations. Samples were collected above the mine site and before and after treatment, if possible. Data in this report will provide a base that can be used to compare drainage quality to type of surface mining, reclamation, mining age, and geology. However, the data base presented in this report is relatively small and the water quality of streams draining areas of similar land use and lithology could be significantly different.

The help and cooperation of the mine companies, their employees, and individual land owners who gave us permission to sample is greatly appreciated.

EXPLANATION OF TABLES

A summary of selected basin physical characteristics of the sites, arranged according to groups, site numbers, and latitude-longitude within the individual group, is shown in table 1.

A summary of field parameters collected at these sites is shown in table 2.

Information for each site, with detailed water-quality data, is shown in table 3.

Site-Numbering System

Sampling-site locations are shown in figure 1. Each site has an identification number consisting of three parts. The first part contains a letter or letters and a number. The letters represent the geologic group or formation ("D" represents the Dunkard Group, "M" the Monongahela Group, "C" the Conemaugh Group, "A" the Allegheny Formation, "K" the Kanawha Formation, "NR" the New River Formation, and "P" the Pocahontas Formation). The number is a sequential number in each of the groups or formations. The letter in the second part of identification number classifies the site as active (A), reclaimed (R), or unreclaimed (U). The letters in the third part of the number specifies the type of mining used at the site. The three types of mining are mountaintop (Mt), contour (C), and area (A). Unmined sites are listed with geologic formation or group letters and numbers and the word "BASE". Sites sampled at pond outflow points are listed with geologic or group letters and the word "OUTFLOW". See the map (fig. 1) for examples of the numbering system.

Definitions

There may be an overlap between the active, reclaimed, and unreclaimed sites according to the stage of mining and changes to mining law. The mining sites have also been classified as to types of mining (area, contour, or mountaintop). The types of mining also overlap because more than one type of mining method is often used at a surface-mine site. Mine status and types of mining are defined below:

Mine status:

Active mining site--An active mining site is one which has or has had recent mining activity and is not completely reclaimed.

Reclaimed mining site--A reclaimed site is one that has no active mining and has been reclaimed according to the State law in effect at the time of the mining.

Unreclaimed mining site--An unreclaimed mining site is one that has had no recent mining and has been left with exposed mined surface and (or) high walls.

Types of mining:

Area--Area mining involves the removal of overburden from the surface of large areas where the topography is flat or rolling and the coal is not too deeply buried.

Contour--Contour mining is the mining of coal along the crop line (the line on hill slopes that marks the intersection of the coal seam with the surface).

Mountaintop--Mountaintop mining is the removal of the entire mountaintop in areas where topography is steep and the coal is not too deeply buried.

Abbreviations

Abbreviations used in the tables of this report are as follows:

CFS = Cubic feet per second
US/M = Microsiemens per meter at 25° Celsius
UG/L = Micrograms per liter
DEG C = Degrees Celcius
mi^2 = Square miles

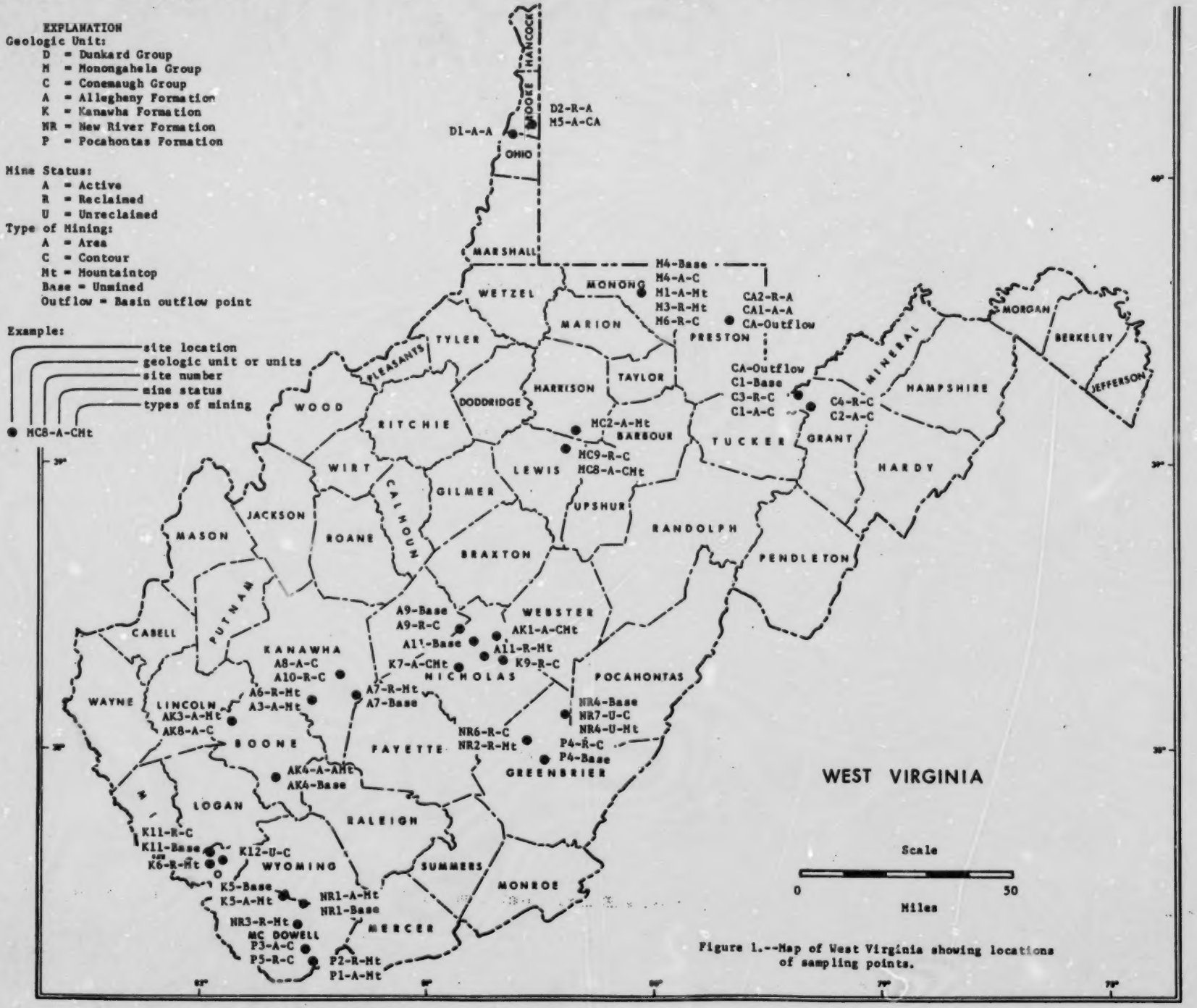

Figure 1.--Map of West Virginia showing locations of sampling points.

Table 1.--Basin physical characteristics
[A dash indicates date unknown]

Site number	Name	County	Latitude	Longitude	Drainage area (mi^2)	Geologic group or formation	Coal seams mined	Mine status	Dates of mining	Types of mining
D2-R-A	Mingo Run Tributary 1 near McKinleyville, W. Va.	Brooke	40°14'45"	80°32'32"	0.02	Dunkard Group	Washington	Reclaimed	1975-76	Area
D1-A-A	Waddles Run near Wheeling, W. Va.	Ohio	40°10'28"	80°38'37"	.02	Dunkard Group	Washington	Active	1983-84	Area
M5-A-CA	Mingo Run Tributary 2 near McKinleyville, W. Va.	Brooke	40°13'45"	80°33'13"	.19	Monongahela Group	Waynesburg	Active	1983-84	Contour
M4-Base	Scotts Run Tributary near Osage, W. Va.	Monongalia	39°39'12"	80°01'52"	.15	Monongahela Group	None	No mining	--	None
M4-A-C	Dents Run Tributary 1 near Laurel Point, W. Va.	Monongalia	39°38'03"	80°01'55"	.11	Monongahela Group	Waynesburg	Active	1980-84	Contour
M1-A-Mt	Dents Run Tributary 2 near Laurel Point, W. Va.	Monongalia	39°37'59"	80°02'45"	.09	Monongahela Group	Waynesburg	Active	1981-84	Mountaintop
M3-R-Mt	Little Indian Creek Tributary 1 near Georgetown, W. Va.	Monongalia	39°35'50"	80°04'13"	.20	Monongahela Group	Waynesburg	Reclaimed	1973-75	Mountaintop
M6-R-C	Little Indian Creek Tributary 2 near Georgetown, W. Va.	Monongalia	39°35'41"	80°04'31"	.23	Monongahela Group	Waynesburg	Reclaimed	1977-78	Contour
MC2-A-Mt	Lost Creek tributary near Lost Creek, W. Va.	Harrison	39°07'49"	80°20'57"	.15	Monongahela and Conemaugh Groups	Redstone Pittsburgh	Active	1983-84	Mountaintop
MC9-R-C	Hackers Creek tributary near Weston, W. Va.	Lewis	39°04'34"	80°23'08"	.27	Monongahela and Conemaugh Groups	Redstone Pittsburgh	Reclaimed	1976-77 1981-83	Contour

Table 1.--Basin physical characteristics--continued
[A dash indicates date unknown]

Site number	Name	County	Latitude	Longitude	Drainage area (mi^2)	Geologic group or formation	Coal seams mined	Mine status	Dates of mining	Types of mining
MC8-A-CMt	Lifes Run tributary near Weston, W. Va.	Lewis	39°03'49"	80°24'11"	.07	Monongahela and Conemaugh Group	Redstone Pittsburgh	Active	1983-84	Contour and mountaintop
CA2-R-A	Glade Run tributary near Valley Point, W. Va.	Preston	39°34'37"	79°39'48"	.19	Conemaugh Group Allegheny Formation	Upper Freeport	Reclaimed	1978-79	Area
CA1-A-A	Martin Creek tributary near Valley Point, W. Va.	Preston	39°33'02"	79°39'58"	.60	Conemaugh Group Allegheny Formation	Upper Freeport	Active	1983-84	Area
CA-Outflow	Martin Creek near Valley Point, W. Va.	Preston	39°32'59"	79°37'55"	7.21	Conemaugh Group Allegheny Formation	Several in formations	Active, reclaimed, and deep mines	Unknown	Both surface and deep mines present
CA-Outflow	Difficult Creek (lower) near Gormania, W. Va.	Grant	39°17'54"	79°17'34"	8.12	Conemaugh Group Allegheny Formation	Harlem Bakerstown Freeport	Active and reclaimed	1961-67 1978-84	Contour
C3-R-C	Difficult Creek Tributary 1 near Gormania, W. Va.	Grant	39°17'34"	79°18'27"	.28	Conemaugh Group	Harlem Bakerstown	Reclaimed	1961-67	Contour
C1-A-C	Difficult Creek Tributary 2 near Gormania, W. Va.	Grant	39°17'30"	79°17'27"	.70	Conemaugh Group	Bakerstown	Active	1983-84	Contour
C1 Base	Difficult Creek (upper) near Gormania, W. Va.	Grant	39°16'29"	79°18'48"	5.31	Conemaugh Group	None	No mining	--	None
C4-R-C	Stony River Tributary 1 near Mt. Storm, W. Va.	Grant	39°14'46"	79°16'50"	.16	Conemaugh Group	Bakerstown	Reclaimed	1975-81	Contour
C2-A-C	Stony River Tributary 2 near Mt. Storm, W. Va.	Grant	39°14'10"	79°17'28"	.23	Conemaugh Group	Bakerstown	Active	1983-84	Contour
A9-R-C	Elm Creek (lower) near Widen, W. Va.	Clay	38°26'08"	80°53'20"	2.04	Allegheny Formation	Lower Kittanning	Reclaimed	1972-76	Contour
A9-Base	Elm Creek (upper) near Widen, W. Va.	Nicholas	38°24'09"	80°51'13"	.24	Allegheny Formation	None	No mining	--	None

Table 1.--Basin physical characteristics--continued
[A dash indicates date unknown]

Site number	Name	County	Latitude	Longitude	Drainage area (mi^2)	Geologic group or formation	Coal seams mined	Mine status	Dates of mining	Types of mining
A11-Base	Little Creek near Hookersville, W. Va.	Nicholas	38°24'12"	80°46'06"	.44	Allegheny Formation	None	No mining	--	None
AK1-A-C Mt	Tedrow Branch near Tioga, W. Va.	Nicholas	38°22'43"	80°41'56"	.11	Allegheny and Kanawha Formations	Freeport, Kittanning, Coalburg	Active	1981-84	Contour Mountaintop
A11-R-Mt	McMillion Creek tributary at Werth, W. Va.	Nicholas	38°21'15"	80°45'39"	.23	Allegheny Formation	Lower Kittanning	Reclaimed	1978-79	Mountaintop
A8-A-C	Witcher Creek near Cedar Grove, W. Va.	Kanawha	38°16'23"	81°24'43"	.19	Allegheny Formation	Lower Kittanning	Active	1983-84	Contour
A10-R-C	Bufflick Branch near Cedar Grove, W. Va.	Kanawha	38°15'58"	81°24'25"	.29	Allegheny Formation	Lower Kittanning	Reclaimed	1973-74	Contour
A7-R-Mt	Lynch Fork near Cannelton, W. Va.	Fayette	38°12'36"	81°15'41"	.39	Allegheny	Upper Kittanning, Lower Kittanning	Reclaimed	1970-73	Mountaintop
A7-Base	Bullpush Fork tributary near Cannelton, W. Va.	Kanawha	38°13'19"	81°17'32"	.23	Allegheny Formation	None	No mining	--	None
A6-R-Mt	Little Creek Tributary 1 near Chelyan, W. Va.	Kanawha	38°11'27"	81°30'48"	.34	Allegheny Formation	Lower Kittanning	Reclaimed	1979-80	Mountaintop
A3-A-Mt	Little Creek Tributary 2 near Chelyan, W. Va.	Kanawha	38°10'13"	81°31'52"	.09	Allegheny Formation	Lower Kittanning	Active	1983-84	Mountaintop
AK8-A-C	Long Branch near Morrisvale, W. Va.	Boone	38°07'34"	81°53'30"	.52	Allegheny and Kanawha Formations	Lower Kittanning to Middle	Active	1980-83	Contour
AK3-A-Mt	Bragg Fork near Morrisvale, W. Va.	Boone	38°06'42"	81°53'24"	.86	Allegheny and Kanawha Formations	Lower Kittanning to Middle Stockton	Active	1978-84	Mountaintop

Table 1.--Basin physical characteristics--continued
[A dash indicates date unknown]

Site number	Name	County	Latitude	Longitude	Drainage area (mi^2)	Geologic group or formation	Coal seams mined	Mine status	Dates of mining	Types of mining
AK4-A-AMt	Trace Fork near Barrett, W. Va.	Boone	37°52'22"	81°41'31"	.20	Allegheny and Kanawha Formations	Coalburg, Stockton, Lower Kittanning	Active	1982-84	Area and mountaintop
AK4-Base	Right Fork Trace Fork near Barrett, W. Va.	Boone	37°52'21"	81°41'31"	.15	Allegheny and Kanawha Formations	None	No mining	--	None
K9-R-C	Barn Run at Cottle, W. Va.	Nicholas	38°21'20"	80°38'04"	.33	Kanawha Formation	Peerless, Eagle	Reclaimed	1974-79	Contour
K11-Base	Sharkey Branch (upper) near Hampden, W. Va.	Mingo	37°39'46"	81°58'43"	.12	Kanawha Formation	None	No mining	--	None
K11-R-C	Sharkey Branch (lower) near Hampden, W. Va.	Mingo	37°38'56"	81°58'03"	1.56	Kanawha Formation	Upper Cedar Grove, Lower Cedar Grove	Reclaimed	1974-76 1978-79	Contour
K12-U-C	Adams Fork near Gilbert, W. Va.	Mingo	37°36'40"	81°55'44"	.31	Kanawha Formation	Chilton	Unreclaimed	1960's 1970's	Contour
K6-R-Mt	Walnut Hollow near Gilbert, W. Va.	Mingo	37°35'30"	81°56'25"	.12	Kanawha Formation	Upper and Lower Cedar Grove, Alma Rider, Pond Creek	Reclaimed	1976-84	Mountaintop
K5-A-Mt	Sal Gibson Hollow tributary near Iaeger, W. Va.	McDowell	37°29'51"	81°44'54"	.12	Kanawha Formation	Eagle, Matewan, Bens Creek	Active	1982-84	Mountaintop
K5-Base	Right Fork Sandy Huff Branch near Iaeger, W. Va.	McDowell	37°29'10"	81°44'16"	.28	Kanawha Formation	None	No mining	--	None
K7-A-C-Mt	Huddlety Creek tributary at Summersville, W. Va.	Nicholas	38°17'49"	80°50'37"	.34	Kanawha Formation	Peerless, Eagle	Active	1981-84	Contour and mountaintop
NR4-Base	Bear Run tributary near Richwood, W. Va.	Greenbrier	38°10'39"	80°21'52"	1.15	New River Formation	None	No mining	--	None

Table 1.--Basin physical characteristics--continued
[A dash indicates date unknown]

Site number	Name	County	Latitude	Longitude	Drainage area (mi^2)	Geologic group or formation	Coal seams mined	Mine status	Dates of mining	Types of mining
NR7-U-C	Rocky Run tributary near Richwood, W. Va.	Greenbrier	38°10'05"	80°23'19"	.09	New River Formation	Sewell	Unreclaimed	1960's 1970's	Contour
NR4-U-Mt	South Fork Cherry River tributary near Richwood, W. Va.	Greenbrier	38°08'59"	80°22'58"	.05	New River Formation	Sewell	Unreclaimed	1976-78	Mountaintop
NR6-R-C	Smokehouse Branch tributary near Duo, W. Va.	Greenbrier	38°02'59"	80°34'30"	.16	New River Formation	Fire Creek, Beckley	Reclaimed	1981-83	Contour
NR2-R-Mt	South Fork Big Clear Creek tributary near Duo, W. Va.	Greenbrier	38°02'06"	80°35'54"	.10	New River Formation	Fire Creek, Beckley	Reclaimed	1973-83	Mountaintop
NR1-A-Mt	Indian Creek Tributary 1 near Welch, W. Va.	Wyoming	37°29'37"	81°31'42"	.13	New River Formation	Sewell	Active	1983-84	Mountaintop
NR1-Base	Indian Creek Tributary 2 near Welch, W. Va.	Wyoming	37°29'01"	81°31'11"	.40	New River Formation	None	No mining	--	None
NR3-R-Mt	Elkhorn Creek tributary at Welch, W. Va.	McDowell	37°25'45"	81°34'02"	.63	New River Formation	Sewell, Welch	Reclaimed	1978-84	Mountaintop
P4-R-C	Rader Run (lower) near Rupert, W. Va.	Greenbrier	37°58'41"	80°36'51"	.46	Pocahontas Formation	Pocahontas No. 6	Reclaimed	1982-83	Contour
P4-Base	Rader Run (upper) near Rupert, W. Va.	Greenbrier	37°58'36"	80°36'15"	.11	Pocahontas Formation	None	No mining	--	None
P3-A-C	Dauss Fork near Filbert, W. Va.	McDowell	37°17'49"	81°31'57"	.17	Pocahontas Formation	Pocahontas Nos 4 & 5	Active	1972-75 1980-84	Contour
P5-R-C	Long Branch tributary near Filbert, W. Va.	McDowell	37°17'22"	81°33'25"	.02	Pocahontas Formation	Pocahontas No. 3	Reclaimed	1976-77	Contour
P2-R-Mt	South Fork Tug Fork tributary near Skygusty, W. Va.	McDowell	37°16'42"	81°29'10"	.03	Pocahontas Formation	Pocahontas Nos. 4 & 5	Reclaimed	1978-81	Mountaintop, Flow may be influenced by deep mine
P1-A-Mt	Freeman Branch near Skygusty, W. Va.	McDowell	37°16'38"	81°29'28"	.23	Pocahontas Formation	Pocahontas Nos. 4 & 5	Active	1978-84	Mountaintop

Table 2.--Field measurements
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Stream-flow instan-taneous (CFS)	Specific conduc-tance (US/CM)	pH (STAND-ARD UNITS)	Alka-linity (MG/L)	Acidity (MG/L AS H)	Water temper-ature (DEG C)	Detailed chemical analysis available
D2-R-A	Mingo Run Tributary 1 near McKinleyville, W. Va.	40°14'45"	80°32'32"	5-30-84 8-7-84	1100 1045	0.14 .01	585 640	8.1 8.1	210 225	-- --	13.0 19.0	* *
D1-A-A	Waddles Run near Wheeling, W. Va.	40°10'28"	80°38'37"	5-30-84 8-7-84	0930 0945	<0.01 0	380	7.3	130	--	13.0	*
M5-A-CA	Mingo Run Tributary 2 near McKinleyville, W. Va.	40°13'45"	80°33'13"	5-30-84 8-7-84	1225 1200	.90 <0.01	390 430	7.2 8.0	85 170	-- --	15.5 20.0	* *
M4-Base	Scotts Run tributary near Osage, W. Va.	39°39'12"	80°01'52"	6-4-84 8-7-84	1555 1510	.04 0	640	7.2	220	--	17.5	*
M4-A-C	Dents Run Tributary 1 near Laurel Point, W. Va.	39°38'03"	80°01'55"	6-4-84 8-7-84	1640 1525	.17 0.01	690 1,140	4.7 7.6	-- 75	0.5 --	21.0 27.5	* (2) * (2)
M1-A-Mt	Dents Run Tributary 2 near Laurel Point, W. Va.	39°37'59"	80°02'45"	6-4-84 8-6-84	1405 1610	.57 .09	1,570 2,000	4.7 8.0	-- 119	1.0 --	19.0 28.5	* (2) * (2)
M3-R-Mt	Little Indian Creek Tributary 1 near Georgetown, W. Va.	39°35'50"	80°04'13"	5-29-84 8-7-84	1515 1605	.71 .16	1,300 2,300	7.3 7.4	140 310	-- --	17.0 22.5	* *
M6-R-C	Little Indian Creek Tributary 2 near Georgetown, W. Va.	39°35'41"	80°04'31"	5-29-84 8-7-84	1545 1615	.73 .09	770 1,200	7.6 8.0	150 260	-- --	14.0 22.0	* *
MC2-A-Mt	Lost Creek tributary near Lost Creek, W. Va.	39°07'49"	80°20'57"	5-21-84 8-6-84	1525 1305	.05 .03	640 950	8.7 8.4	59 94	-- --	24.0 25.5	* *
MC9-R-C	Hackers Creek tributary near Weston, W. Va.	39°04'34"	80°23'08"	5-21-84 8-6-84	1355 1200	.02 .06	370 420	7.7 7.8	43 76	-- --	27.0 27.5	* *
MC8-A-CMt	Lifes Run tributary near Weston, W. Va.	39°03'49"	80°24'11"	5-21-84 8-6-84	1315 1105	.02 .09	320 430	8.0 7.9	82 88	-- --	23.5 25.0	* *

Table 2.--Field measurements--continued
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Streamflow instantaneous (CFS)	Specific conductance (US/CM)	pH (STANDARD UNITS)	Alkalinity (MG/L)	Acidity (MG/L AS H)	Water temperature (DEG C)	Detailed chemical analysis available
CA2-R-A	Glade Run tributary near Valley Point, W. Va.	39°34'37"	79°39'48"	6-5-84	1040	.34	3,350	3.2	--	19	17.5	*
				8-8-84	1020	.28	3,200	3.2	--	18	17.5	*
CA1-A-A	Martin Creek tributary near Valley Point, W. Va.	39°33'02"	79°39'58"	5-31-84	0855	.68	920	3.5	--	1.9	14.5	* (2)
				8-8-84	0855	.23	1,100	8.6	45	--	23.5	* (2)
CA-Outflow	Martin Creek near Valley Point, W. Va.	39°32'59"	79°37'55"	6-5-84	1200	10.5	2,000	3.2	--	12	15.0	(3)
				8-8-84	1140	5.9	2,490	3.2	--	13	20.0	* (3)
CA-Outflow	Difficult Creek (lower) near Gormania, W. Va.	39°17'54"	79°17'34"	6-6-84	0950	3.1	122	7.2	22	--	13.0	*
				8-27-84	1440	3.3	110	7.3	20	--	15.0	*
C3-R-C	Difficult Creek Tributary 1 near Gormania, W. Va.	39°17'34"	79°18'27"	6-6-84	1150	.02	420	7.2	42	--	16.0	*
				8-27-84	1540	.02	290	7.3	57	--	18.5	*
C1-A-C	Difficult Creek Tributary 2 near Gormania, W. Va.	39°17'30"	79°17'27"	6-6-84	0815	.17	230	7.9	62	--	18.0	*
				8-27-84	1350	.13	260	7.3	34	--	24.0	*
C1 Base	Difficult Creek (upper) near Gormania, W. Va.	39°16'29"	79°18'48"	6-5-84	1610	2.4	35	6.8	7	--	14.5	*
				8-27-84	1620	2.5	35	6.6	7	--	16.0	*
C4-R-C	Stony River Tributary 1 near Mt. Storm, W. Va.	39°14'46"	79°16'50"	6-6-84	1350	.47	1,450	8.0	200	--	21.5	*
				8-28-84	0830	.23	1,270	7.8	184	--	14.0	*
C2-A-C	Stony River Tributary 2 near Mt. Storm, W. Va.	39°14'10"	79°17'28"	6-6-84	1410	.04	375	8.0	75	--	20.0	*
				8-28-84	0930	.07	615	7.7	63	--	17.5	*
A9-R-C	Elm Creek (lower) near Widen, W. Va.	38°26'08"	80°53'20"	5-17-84	1330	2.9	315	5.2	1	.1	12.0	*
				7-26-84	1140	.49	320	5.1	1	.1	18.0	*
A9-Base	Elm Creek (upper) near Widen, W. Va.	38°24'09"	80°51'13"	5-17-84	1125	.19	47	5.4	1	--	9.0	*
				7-26-84	1030	.02	63	6.1	3	--	17.0	*
A11-Base	Little Creek near Hookersville, W. Va.	38°24'12"	80°46'06"	5-17-84	0840	.88	40	6.2	3	--	7.5	*
				7-30-84	1030	.02	37	5.9	4	--	15.0	*

Table 2.--Field measurements--continued
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Streamflow instantaneous (CFS)	Specific conductance (US/CM)	pH (STANDARD UNITS)	Alkalinity (MG/L)	Acidity (MG/L AS H)	Water temperature (DEG C)	Detailed chemical analysis available
AK1-A-C Mt	Tedrow Branch near Tioga, W. Va.	38°22'43"	80°41'56"	5-16-84	1035	.04	126	7.1	16	--	10.0	*
				7-30-84	1400	<0.01	430	7.9	65	--	17.0	*
A11-R-Mt	McMillion Creek tributary at Werth, W. Va.	38°21'15"	80°45'39"	5-16-84	1530	.18	480	6.4	4	--	13.0	*
				7-30-84	1135	.04	526	6.3	4	--	15.5	*
A8-A-C	Witcher Creek near Cedar Grove, W. Va.	38°16'23"	81°24'43"	5-3-84	1245	.22	740	3.9	--	1.3	10.5	*
				7-18-84	1430	.07	930	3.8	--	2.4	21.0	*
A10-R-C	Bufflick Branch near Cedar Grove, W. Va.	38°15'58"	81°24'25"	5-30-84	1040	.32	197	4.5	--	.3	11.0	*
				7-18-84	1305	.03	226	4.4	--	.3	19.0	*
A7-R-Mt	Lynch Fork near Cannelton, W. Va.	38°12'36"	81°15'41"	5-2-84	1345	.80	860	8.1	130	--	13.5	*
				7-18-84	1015	.19	930	8.0	130	--	20.5	*
A7-Base	Bullpush Fork tributary near Cannelton, W. Va.	38°13'19"	81°17'32"	5-2-84	1445	.26	83	6.8	9	--	11.0	*
				7-18-84	1130	<0.01	96	6.9	8	--	22.0	*
A6-R-Mt	Little Creek Tributary 1 near Chelyan, W. Va.	38°11'27"	81°30'48"	6-11-84	1310	.10	2,840	3.3	--	19	22.0	*
				7-19-84	1105	.12	2,100	3.4	--	13	19.0	*
A3-A-Mt	Little Creek Tributary 2 near Chelyan, W. Va.	38°10'13"	81°31'52"	6-11-84	1110	<0.01	310	7.0	13	--	26.0	*
				7-19-84	0945	.03	998	3.6	--	2.6	18.0	*
AK8-A-C	Long Branch near Morrisvale, W. Va.	38°07'34"	81°53'30"	4-30-84	1240	.36	1,500	6.7	93	--	17.0	*
				7-16-84	1215	.16	1,530	7.9	130	--	20.5	
				7-23-84	1040	.10	1,680	8.1	141	--	20.0	*
AK3-A-Mt	Bragg Fork near Morrisvale, W. Va.	38°06'42"	81°53'24"	4-30-84	1120	.68	1,900	7.3	175	--	15.5	*
				7-16-84	1115	.31	1,620	7.6	210	--	19.5	*
				7-23-84	0930	.18	1,900	8.0	230	--	19.5	*
AK4-A-AMt	Trace Fork near Barrett, W. Va.	37°52'22"	81°41'31"	5-14-84	1220	.15	76	6.6	5	--	11.5	*
				7-16-84	1430	<0.01	98	7.0	14	--	22.0	
				7-23-84	1240	<0.01	90	7.2	17	--	20.0	*

Table 2.--Field measurements--continued
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Streamflow instantaneous (CFS)	Specific conductance (US/CM)	pH (STANDARD UNITS)	Alkalinity (MG/L)	Acidity (MG/L AS H)	Water temperature (DEG C)	Detailed chemical analysis available
AK4-Base	Right Fork Trace Fork near Barrett, W. Va.	37°52'21"	81°41'31"	5-14-84	1250	.10	32	6.3	3	--	11.0	*
				7-16-84	1435	<0.01	57	6.4	9	--	19.0	
				7-23-84	1245	<0.01	60	6.7	11	--	18.0	*
K9-R-C	Barn Run at Cottle, W. Va.	38°21'20"	80°38'04"	5-16-84	1715	.36	83	6.4	5	--	16.0	*
				7-30-84	1515	.05	110	7.2	21	--	24.0	*
K11-Base	Sharkey Branch (upper) near Hampden, W. Va.	37°39'46"	81°58'45"	4-30-84	1620	0.30	37	6.6	3	--	13.0	*
				7-17-84	0850	<0.01	45	6.3	8	--	18.0	*
K11-R-C	Sharkey Branch (lower) near Hampden, W. Va.	37°38'56"	81°58'03"	4-30-84	1800	5.2	110	6.8	12	--	15.0	*
				7-17-84	0720	.28	160	7.6	39	--	21.0	*
				7-24-84	0925	.08	170	7.7	42	--	20.0	*
K12-U-C	Adams Fork near Gilbert, W. Va.	37°36'40"	81°55'44"	5-1-84	0845	.23	240	6.9	13	--	9.0	*
				7-17-84	1105	.03	280	7.0	21	--	18.0	
				7-24-84	1015	.02	280	7.0	23	--	17.5	*
K6-R-Mt	Walnut Hollow near Gilbert, W. Va.	37°35'30"	81°56'25"	5-1-84	1340	.07	1,370	8.1	190	--	15.0	*
				7-17-84	1140	.15	420	7.3	61	--	18.0	
				7-24-84	1050	.01	1,420	8.2	208	--	21.5	*
K5-A-Mt	Sal Gibson Hollow tributary near Iaeger, W. Va.	37°29'51"	81°44'54"	5-1-84	1740	.11	160	7.0	14	--	15.0	*
				7-17-84	1440	.02	48	7.1	27	--	21.0	
				7-24-84	1305	.01	410	7.5	24	--	20.0	*
K5-Base	Right Fork Sandy Huff Branch tributary near Iaeger, W. Va.	37°29'10"	81°44'16"	5-1-84	1655	.44	60	6.6	7	--	13.5	*
				7-17-84	1540	.01	102	7.0	18	--	22.0	
				7-24-84	1410	<0.01	105	7.1	19	--	22.0	*
K7-A-C-Ht	Huddlety Creek tributary at Summersville, W. Va.	38°17'49"	80°50'37"	5-16-84	1330	.28	290	7.2	46	--	16.5	*
				7-30-84	1240	.02	360	7.4	89	--	20.5	*
NR4 Base	Bear Run tributary near Richwood, W. Va.	38°10'39"	80°21'52"	5-23-84	1110	.90	26	6.4	3	--	12.0	*
				8-1-84	1030	.34	22	5.3	2	--	14.5	*

Table 2.--Field measurements--continued
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Streamflow instantaneous (CFS)	Specific conductance (US/CM)	pH (STANDARD UNITS)	Alkalinity (MG/L)	Acidity (MG/L AS H)	Water temperature (DEG C)	Detailed chemical analysis available
NR7-U-C	Rocky Run tributary near Richwood, W. Va.	38°10'05"	80°23'19"	5-23-84	0800	.09	94	7.4	25	--	14.5	*
				8-1-84	0750	.04	98	7.6	29	--	17.0	*
NR4-U-Mt	South Fork Cherry River tributary near Richwood, W. Va.	38°08'59"	80°22'58"	5-23-84	1055	.10	380	6.7	70	--	17.0	*
				8-1-84	0930	.08	500	6.8	6	--	16.0	*
NR6-R-C	Smokehouse Branch tributary near Duo, W. Va.	38°02'59"	80°34'30"	5-22-84	1130	.11	270	7.4	20	--	17.0	*
				7-31-84	1040	.12	240	7.7	42	--	18.0	*
NR2-R-Mt	South Fork Big Clear Creek tributary near Duo, W. Va.	38°02'06"	80°35'54"	5-22-84	1025	.04	138	6.5	10	--	14.5	*
				7-31-84	0850	<0.01	138	7.4	31	--	14.0	*
NR1-A-Mt	Indian Creek Tributary 1 near Welch, W. Va.	37°29'37"	81°31'42"	5-14-84	1640	.13	110	6.9	16	--	12.5	*
				7-23-84	1545	<0.01	75	7.5	47	--	24.5	*
NR1-Base	Indian Creek Tributary 2 near Welch, W. Va.	37°29'01"	81°31'11"	5-14-84	1605	.51	30	6.9	3	--	13.0	*
				7-23-84	1505	<0.01	160	6.6	7	--	23.0	*
NR3-R-Mt	Elkhorn Creek tributary at Welch, W. Va.	37°25'45"	81°34'02"	5-15-84	1625	.69	770	7.9	110	--	12.0	*
				7-23-84	1635	<0.01	810	8.0	150	--	20.5	*
P4-R-C	Rader Run (lower) near Rupert, W. Va.	37°58'41"	80°36'51"	5-22-84	1430	.20	56	7.1	11	--	11.0	*
				7-31-84	1310	.03	80	7.6	23	--	16.5	*
P4-Base	Rader Run (upper) near Rupert, W. Va.	37°58'36"	80°36'15"	5-22-84	1405	.12	20	7.0	3	--	11.0	*
				7-31-84	1250	.03	19	7.1	6	--	15.0	*
P3-A-C	Dauss Fork near Filbert, W. Va.	37°17'49"	81°31'57"	5-15-84	0920	.11	740	7.6	91	--	10.0	*
				7-25-84	0920	.04	778	7.7	120	--	14.5	*
P5-R-C	Long Branch tributary near Filbert, W. Va.	37°17'22"	81°33'25"	5-15-84	1115	.04	1,020	7.1	93	--	16.0	*
				7-25-84	1045	0	--	--	--	--	--	

Table 2.--Field measurements--continued
[A dash indicates no data]

Site number	Name	Latitude	Longitude	Date	Time	Stream-flow instan-taneous (CFS)	Specific conduc-tance (US/CM)	pH (STAND-ARD UNITS)	Alka-linity (MG/L)	Acidity (MG/L AS H)	Water temper-ature (DEG C)	Detailed chemical analysis available
P2-R-Mt	South Fork Tug Fork tributary near Skygusty, W. Va.	37°16'42"	81°29'10"	5-15-84	1330	.10	1,140	7.0	86	--	16.0	* (4)
				7-25-84	1215	.04	1,360	7.2	130	--	24.5	* (4)
P1-A-Mt	Freeman Branch near Skygusty, W. Va.	37°16'38"	81°29'28"	5-15-84	1405	.32	750	7.4	27	--	14.0	*
				7-25-84	1305	.03	690	7.6	33	--	19.0	*

* Detailed chemical analysis is available and listed in table 3 of this report.
(1) Upstream from treatment point.
(2) Downstream from treatment point.
(3) Includes flow from deep and surface mines.
(4) Discharge may be influenced by deep-mine drainage.

Table 3.--Site information and water-quality data

BUFFALO CREEK BASIN

D2-R-A MINGO RUN TRIBUTARY 1 NEAR MCKINLEYVILLE, WV

LOCATION.--Lat 40°14'45", long 80°32'32", Brooke County, Hydrologic Unit 05030106, 400 ft south of County Highway 24, and 3 mi east of McKinleyville.

DRAINAGE AREA.--0.02 mi^2.

FORMATION.--Dunkard Group.

COAL SEAM MINED.--Washington Seam.

MINE HISTORY.--Area mining 1975-76.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 30...	1100	.14	585	8.1	12.5	13.0	320	110	110	11	3.5
AUG 07...	1045	.01	640	8.1	25.0	19.0	360	130	120	14	5.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY 30...	1.3	210	110	2.2	.20	435	--	100	--	--	--
AUG 07...	1.2	225	140	2.7	.20	384	.10	30	140	<1	10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 30...	--	1700	15	--	130	66	--	--	--	--	--
AUG 07...	1	2500	11	4	200	110	<.1	1	<1	1	<3

Table 3.--Site information and water-quality data--continued

SHORT CREEK BASIN

D1-A-A WADDLES RUN NEAR WHEELING, WV

LOCATION.--Lat 40°10'28", long 80°38'37", Ohio County, Hydrologic Unit 05030106, at the Wheeling-Ohio County Airport, and 4 mi northeast of Wheeling.

DRAINAGE AREA.--0.02 mi^2.

FORMATION.--Dunkard Group.

COAL SEAM MINED.--Washington seam.

MINE HISTORY.--Area mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
30...	0930	<.01	380	7.3	9.5	13.0	200	66	71	4.4	1.0
AUG											
07...	0945	.00	--	--	--	--	--	--	--	--	--

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
30...	1.6	130	60	1.0	.20	294	<100	690	40	20	4
AUG											
07...	--	--	--	--	--	--	--	--	--	--	--

Table 3.--Site information and water-quality data--continued

BUFFALO CREEK BASIN

M5-A-CA MINGO RUN TRIBUTARY 2 NEAR MCKINLEYVILLE, WV

LOCATION.--Lat 40°13'45", long 80°33'13", Brooke County, Hydrologic Unit 05030106, 0.7 mi south of County Highway 24, 2 mi east of McKinleyville, and 2 mi north of Bethany.

DRAINAGE AREA.--0.19 mi^2.

FORMATION.--Monongahela Group.

COAL SEAM MINED.--Waynesburg seam.

MINE HISTORY.--Contour and area mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
30...	1225	.90	390	7.2	8.5	15.5	180	94	50	13	7.1
AUG											
07...	1200	<.01	430	8.0	25.5	20.0	220	55	67	14	6.4

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
30...	1.8	85	110	3.7	.30	323	<100	5300	78	190	47
AUG											
07...	2.5	170	66	3.6	.20	316	<100	920	16	70	15

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

M4-Base SCOTTS RUN TRIBUTARY NEAR OSAGE, WV

LOCATION.--Lat 39°39'12", long 80°01'52", Monongalia County, Hydrologic Unit 05020003, 200 ft north of County Highway 48/8, and 1.0 mi west of Osage.

DRAINAGE AREA.--0.15 mi^2.

FORMATION.--Monongahela Group.

COAL SEAMS MINED.--None.

MINE HISTORY.--No surface mining in the basin.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 04...	1555	.04	640	7.2	25.5	17.5	290	74	83	21	13
AUG 07...	1510	.00	--	--	--	--	--	--	--	--	--

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 04...	2.4	220	100	3.3	.20	459	<100	280	5	30	23
AUG 07...	--	--	--	--	--	--	--	--	--	--	--

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

M4-A-C DENTS RUN TRIBUTARY 1 NEAR LAUREL POINT, WV

LOCATION.--Lat 39°38'03", long 80°01'55", Monongalia County, Hydrologic Unit 05020003, beside County Highway 46, and 2 mi northwest of Laurel Point.

DRAINAGE AREA.--0.11 mi^2.

FORMATION.--Monongahela Group.

COAL SEAM MINED.--Waynesburg seam.

MINE HISTORY.--Contour mining active 1980-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 04...	1640	.17	690	4.7	26.0	21.0	280	--	.5	72	24	19
AUG 07...	1525	.01	1140	7.6	26.0	27.5	320	250	--	76	32	100

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 04...	3.6	--	340	2.3	.20	608	2200	2300	620	8300	7900
AUG 07...	4.1	75	430	3.0	.40	800	100	260	<3	7600	7400

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

M1-A-Mt DENTS RUN TRIBUTARY 2 NEAR LAUREL POINT, WV

LOCATION.--Lat 39°37'59", long 80°02'45", Monongalia County, Hydrologic Unit 05020003, 1,000 ft west of County Highway 43, and 3 mi northwest of Laurel Point.

DRAINAGE AREA.--0.09 mi^2.

FORMATION.--Monongahela Group.

COAL SEAM MINED.--Waynesburg seam.

MINE HISTORY.--Mountaintop mining active 1981-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 04...	1405	.57	1570	4.7	26.5	19.0	880	--	1.0	220	80	11
AUG 06...	1610	.09	2000	8.0	25.0	28.5	900	780	--	220	85	120

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
JUN 04...	5.6	--	1000	1.6	.40	1540	--	5500	--	--	--
AUG 06...	5.8	119	1100	1.9	.40	1790	4.9	200	41	<1	20

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JUN 04...	--	1000	590	--	14000	12000	--	--	--	--	--
AUG 06...	1	180	<3	6	12000	13000	<.1	200	6	<1	80

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

M3-R-Mt LITTLE INDIAN CREEK TRIBUTARY 1 NEAR GEORGETOWN, WV

LOCATION.--Lat 39°35'50", long 80°04'13", Monongalia County, Hydrologic Unit 05020003, at culvert under County Highway 34, and 1 mi east of Georgetown.

DRAINAGE AREA.--0.20 mi^2.

FORMATION.--Monongahela Group.

COAL SEAM MINED.--Waynesburg seam.

MINE HISTORY.--Mountaintop mining active 1973-75.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
29...	1515	.71	1300	7.3	16.0	17.0	690	550	170	64	22
AUG											
07...	1605	.16	2300	7.4	25.5	22.5	1400	1100	350	130	59

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
29...	3.4	140	590	1.5	.20	1100	<100	780	93	2700	2500
AUG											
07...	4.9	310	1200	3.3	.20	2100	300	840	100	4700	4800

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

M6-R-C LITTLE INDIAN CREEK TRIBUTARY 2 NEAR GEORGETOWN, WV

LOCATION.--Lat 39°35'41", long 80°04'31", Monongalia County, Hydrologic Unit 05020003, 0.3 mi west of County Highway 34, and 0.7 mi east of Georgetown.

DRAINAGE AREA.--0.23 mi^2.

FORMATION.--Monongahela Group.

COAL SEAM MINED.--Waynesburg seam.

MINE HISTORY.--Contour mining active 1977-78.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 29...	1545	.73	770	7.6	15.5	14.0	380	230	96	35	16
AUG 07...	1615	.09	1200	8.0	26.5	22.0	650	390	150	66	40

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 29...	2.5	150	270	3.6	.20	677	<100	520	34	5700	490
AUG 07...	3.5	260	430	5.7	.20	969	<100	280	13	320	310

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

MC2-A-Mt LOST CREEK TRIBUTARY NEAR LOST CREEK, WV

LOCATION.--Lt 39°07'49", long 80°20'57", Harrison County, Hydrologic Unit 05020002, beside County Highway 25/7, 1 mi southwest of Rockford, and 2 mi south of Lost Creek.

DRAINAGE AREA.--0.15 mi^2.

FORMATION.--Monongahela Group and Conemaugh Group.

COAL SEAMS MINED.--Redstone seam and Pittsburgh seam.

MINE HISTORY.--Mountaintop mining 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 21...	1525	.05	640	8.7	30.0	24.0	330	270	88	26	4.8
AUG 06...	1305	.03	950	8.4	25.0	25.5	530	440	140	44	6.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY 21...	2.0	59	280	1.0	.10	516	--	100	--	--	--
AUG 06...	3.1	94	440	1.3	.10	587	<.10	60	66	<1	10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 21...	--	300	4	--	170	120	--	--	--	--	--
AUG 06...	1	310	6	5	150	18	<.1	<1	2	<1	7

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

MC9-R-C HACKERS CREEK TRIBUTARY NEAR WESTON, WV

LOCATION.--Lat 39°04'34", long 80°23'08", Lewis County, Hydrologic Unit 05020002, 0.3 mi southwest of Stony Run, 1 mi east of Interstate 79, 2 mi southeast of Jane Lew, and 4 mi northeast of Weston.

DRAINAGE AREA.--0.27 mi^2.

FORMATION.--Monongahela Group and Conemaugh Group.

COAL SEAM MINED.--Redstone seam and Pittsburgh seam.

MINE HISTORY.--Contour mining active 1976-77 and 1981-83.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 21...	1355	.02	370	7.7	27.0	27.0	170	120	47	12	3.8
AUG 06...	1200	.06	420	7.8	27.5	24.5	200	130	57	15	3.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 21...	1.9	43	89	2.8	.10	255	200	220	18	20	11
AUG 06...	5.5	76	130	3.9	.10	314	500	1700	80	340	250

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

MC8-A-CMt LIFES RUN TRIBUTARY NEAR WESTON, WV

LOCATION.--Lat 39°03'49", long 80°24'11", Lewis County Hydrologic Unit 05020002, on west side of Interstate 79, 3 mi south of Jane Lew, and 3 mi northeast of Weston.

DRAINAGE AREA.--0.07 mi^2.

FORMATION.--Monongahela Group and Conemaugh Group.

COAL SEAMS MINED.--Redstone seam and Pittsburgh seam.

MINE HISTORY.--Contour and mountaintop mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
21...	1315	.02	320	8.0	26.0	23.5	150	72	45	10	2.9
AUG											
06...	1105	.09	430	7.9	24.5	25.0	200	120	60	13	7.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
21...	1.8	82	76	3.3	.10	256	<100	390	4	140	120
AUG											
06...	2.9	88	120	6.6	.30	326	800	1300	32	130	58

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

CA2-R-A GLADE RUN TRIBUTARY NEAR VALLEY POINT, WV

LOCATION.--Lat 39°34'37", long 79°39'48", Preston County, Hydrologic Unit 05020004, beside County Highway 15/2, and 1.5 mi west of Valley Point.

DRAINAGE AREA.--0.19 mi^2.

FORMATION.--Conemaugh Group and Allegheny Formation.

COAL SEAM MINED.--Upper Freeport seam.

MINE HISTORY.--Area mining and active 1978-79.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 05...	1040	.34	3350	3.2	28.0	17.5	1200	19	210	170	2.8
AUG 08...	1020	.28	3200	3.2	23.0	17.5	--	18	--	--	--

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 05...	3.6	2400	1.9	.40	3830	100000	34000	34000	68000	48000
AUG 08...	--	--	--	--	--	--	--	--	--	--

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

CA1-A-A MARTIN CREEK TRIBUTARY NEAR VALLEY POINT, WV

LOCATION.--Lat 39°33'02", long 79°39'58", Preston County, Hydrologic Unit 05020004, 2.1 mi upstream from mouth of Martin Creek and Muddy Creek, and 2.5 mi southwest of Valley Point.

DRAINAGE AREA.--0.60 mi^2.

FORMATIONS.--Conemaugh Group and Allegheny Formation.

COAL SEAM MINED.--Upper Freeport seam.

MINE HISTORY.--Area and contour mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY												
31...	0855	.68	920	3.5	10.5	14.5	270	--	1.9	66	26	1.3
AUG												
08...	0855	.23	1100	8.6	22.0	23.5	400	360	--	100	37	1.6

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
31...	3.5	--	400	1.0	.30	659	6900	5500	5800	10000	11000
AUG											
08...	4.5	45	490	1.5	.30	790	700	260	<3	8700	9200

Table 3.--Site information and water-quality data--continued

MONONGAHELA RIVER BASIN

CA - Outflow MARTIN CREEK NEAR VALLEY POINT, WV

LOCATION.--Lat 39°32'59", long 79°37'55", Preston County, Hydrologic Unit 05020004, beside W. Va. Route 26, 100 ft upstream from mouth, and 3 mi south of Valley Point, W. Va.

DRAINAGE AREA.--7.21 mi^2.

FORMATION.--Conemaugh Group and Allegheny Formation.

COAL SEAMS MINED.--Seams of the Conemaugh and Allegheny Formations that are in the basin have been mined.

MINE HISTORY.--Basin includes active and inactive deep and strip mines in seams of the Conemaugh Group and Allegheny Formations.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 05...	1200	11	2000	3.2	--	15.0	--	12	--	--	--
AUG 08...	1140	5.9	2490	3.2	23.5	20.0	740	13	140	94	3.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 05...	--	--	--	--	--	--	--	--	--	--
AUG 08...	2.8	1500	3.2	.10	2470	50000	63000	56000	20000	21000

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

CA - Outflow DIFFICULT CREEK (LOWER) NEAR GORMANIA, WV

LOCATION.--Lat 39°17'54", long 79°17'34", Grant County, Hydrologic Unit 02070002, at mouth of Difficult Creek, and 3 mi east of Gormania.

DRAINAGE AREA.--8.12 mi^2.

FORMATION.--Conemaugh Group and Allegheny Formation.

COAL SEAMS MINED.--Harlem seam, Bakerstown seam, and Freeport seam.

MINE HISTORY.--Contour mining active 1961-67, 1978-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 06...	0950	3.1	122	7.2	17.0	13.0	49	27	14	3.3	1.7
AUG 27...	1440	3.3	110	7.3	23.0	15.0	41	21	12	2.7	1.4

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 06...	.90	22	27	3.8	<.10	99	<100	370	52	10	20
AUG 27...	.80	20	23	3.2	<.10	69	200	310	160	20	11

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

C3-R-C DIFFICULT CREEK TRIBUTARY 1 NEAR GORMANIA, WV

LOCATION.--Lat 39°17'34", long 79°18'27", Grant County, Hydrologic Unit 02070002, on left side of Difficult Creek, about 1 mi southwest of mouth of Difficult Creek, and 2 mi east of Gormania.

DRAINAGE AREA.--0.28 mi^2.

FORMATION.--Conemaugh Group.

COAL SEAM MINED.--Harlem seam and Bakerstown seam.

MINE HISTORY.--Contour mining active 1961-67.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 06...	1150	.02	420	7.2	25.5	16.0	200	160	53	16	.90
AUG 27...	1540	.02	290	7.3	28.0	18.5	140	83	38	11	.80

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 06...	1.5	42	170	.40	.10	319	<100	560	8	<10	2
AUG 27...	1.4	57	89	.50	.10	196	200	220	8	<10	5

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

C1-A-C DIFFICULT CREEK TRIBUTARY 2 NEAR GORMANIA, WV

LOCATION.--Lat 39°17'30", long 79°17'27", Grant County, Hydrologic Unit 02070002, on right side of Difficult Creek, about ½ mi south of mouth of Difficult Creek, and about 3 mi east of Gormania.

DRAINAGE AREA.--0.70 mi^2.

FORMATION.--Conemaugh Group.

COAL SEAM MINED.--Bakerstown seam.

MINE HISTORY.--Contour mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 06...	0815	.17	230	7.9	16.0	18.0	110	44	31	6.9	1.0
AUG 27...	1350	.13	260	7.3	27.0	24.0	120	83	34	7.7	1.0

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 06...	2.1	.62	45	3.4	.10	162	100	640	14	90	76
AUG 27...	2.4	34	73	3.6	<.10	192	200	1400	9	690	710

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

C1-Base DIFFICULT CREEK (UPPER) NEAR GORMANIA, WV

LOCATION.--Lat 39°16'29", long 79°18'48", Grant County, Hydrologic Unit 02070002, at culvert under U.S. Route 50, and 2 mi southeast of Gormania.

DRAINAGE AREA.--5.31 mi^2.

FORMATION.--Conemaugh Group.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining present.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 05...	1610	2.4	35	6.8	20.0	14.5	13	6	3.9	.89	.40
AUG 27...	1620	2.5	35	6.6	21.0	16.0	13	6	3.9	.86	.30

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 05...	.60	7	6.7	1.2	<.10	23	<100	320	110	10	8
AUG 27...	.50	7	5.3	.90	<.10	29	100	710	270	<10	5

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

C4-R-C STONY RIVER TRIBUTARY 1 NEAR MT. STORM, WV

LOCATION.--Lat 39°14'46", long 79°16'50", Grant County, Hydrologic Unit 02070002, about 2 mi south of U.S. Route 50, and about 3 mi southeast of Mt. Storm.

DRAINAGE AREA.--0.16 mi^2.

FORMATION.--Conemaugh Group.

COAL SEAM MINED.--Bakerstown seam.

MINE HISTORY.--Contour mining active 1975-81.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN											
06...	1350	.47	1450	8.0	22.5	21.5	840	640	260	47	6.6
AUG											
28...	0830	.23	1270	7.8	20.0	14.0	690	500	210	39	6.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN											
06...	17	200	790	4.1	.50	1300	100	640	40	2200	2200
AUG											
28...	16	184	480	4.3	.70	863	100	370	24	1900	2300

Table 3.--Site information and water-quality data--continued

POTOMAC RIVER BASIN

C2-A-C STONY RIVER TRIBUTARY 2 NEAR MT. STORM, WV

LOCATION.--Lat 39°14'10", long 79°17'28", Grant County, Hydrologic Unit 02070002, about 2.5 mi south of U.S. Route 50, and 3 mi southeast of Mt. Storm.

DRAINAGE AREA.--0.23 mi^2.

FORMATION.--Conemaugh Group.

COAL SEAM MINED.--Bakerstown seam.

MINE HISTORY.--Contour mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN 06...	1410	.04	375	8.0	27.0	20.0	190	110	56	11	.80
AUG 28...	0930	.07	615	7.7	25.0	17.5	320	250	94	20	.90

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
JUN 06...	1.7	75	110	1.4	.10	294	100	520	10	40	21
AUG 28...	2.1	63	240	2.3	.10	503	<100	320	16	30	25

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A9-R-C ELM CREEK (LOWER) NEAR WIDEN, WV

LOCATION.--Lat 38°26'08", long 80°53'20", Clay County, Hydrologic Unit 05050007, 0.5 mi upstream from Robinson Fork, and 2.6 mi southwest of Widen.

DRAINAGE AREA.--2.04 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning seam.

MINE HISTORY.--Contour mining active 1972-76.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 17...	1330	2.9	315	5.2	18.0	12.0	130	130	.1	21	19	1.2
JUL 26...	1140	.49	320	5.1	20.5	18.0	150	150	.1	25	21	1.6

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 17...	3.5	1	130	2.0	<.10	241	400	140	43	990	1000
JUL 26...	4.0	1	160	1.3	<.10	258	200	130	7	670	660

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A9-Base ELM CREEK (UPPER) NEAR WIDEN, WV

LOCATION.--Lat 38°24'09", long 80°51'13", Nicholas County, Hydrologic Unit 05050007, 3.9 mi upstream from mouth, and 4.3 mi south of Widen.

DRAINAGE AREA.--0.24 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--None.

MINE HISTORY.--No mining has been done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
17...	1125	.19	47	5.4	19.5	9.0	15	14	2.5	2.2	.40
JUL											
26...	1030	.02	63	6.1	21.5	17.0	22	19	3.6	3.1	.60

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
17...	1.2	1	20	2.0	<.10	145	<100	130	3	20	4
JUL											
26...	1.6	3	24	1.0	<.10	52	<100	120	13	10	8

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

All-Base LITTLE CREEK NEAR HOOKERSVILLE, WV

LOCATION.--Lat 38°24'12", long 80°46'06", Nicholas County, Hydrologic Unit 05050005, 1.2 mi upstream from mouth, and 2.5 mi northeast of Hookersville.

DRAINAGE AREA.--0.44 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--None.

MINE HISTORY.--No mining has been done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 17...	0840	.88	40	6.2	4.0	7.5	13	10	2.7	1.6	.40
JUL 30...	1030	.02	37	5.9	20.5	15.0	12	8	2.5	1.5	.40

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 17...	.80	3	18	2.0	<.10	25	<100	70	<3	10	2
JUL 30...	.90	4	14	1.0	<.10	28	<100	400	18	<10	11

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

AK1-A-CMt TEDROW BRANCH NEAR TIOGA, WV

LOCATION.--Lat 38°22'43", long 80°41'56", Nicholas County, Hydrologic Unit 05050005, 0.6 mi upstream from Harris Fork, and 3.6 mi southwest of Tioga.

DRAINAGE AREA.--0.11 mi^2.

FORMATION.--Allegheny Formation and Kanawha Formation.

COAL SEAMS MINED.--Freeport seam, Kittanning seam, and Coalburg seam.

MINE HISTORY.--Some contour and auger mining in late 1970's, all seams actively mined 1981-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
16...	1035	.04	126	7.1	10.0	10.0	50	34	8.2	7.2	.70
JUL											
30...	1400	.01	430	7.9	22.5	17.0	220	150	34	32	1.5

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
16...	2.1	16	37	2.0	<.10	100	200	1300	62	1200	1100
JUL											
30...	6.1	65	170	1.5	<.10	329	<100	1000	36	4900	5100

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A11-R-Mt McMILLION CREEK TRIBUTARY AT WERTH, WV

LOCATION.--Lat 38°21'15", long 80°45'39", Nicholas County, Hydrologic Unit 05050005, 0.2 mi upstream from McMillion Creek, and 0.4 mi southwest of Werth.

DRAINAGE AREA.--0.23 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning seam.

MINE HISTORY.--Mountaintop mining active 1978-79.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 16...	1530	.18	480	6.4	15.0	13.0	230	230	39	32	1.6
JUL 30...	1135	.04	526	6.3	20.0	15.5	260	250	44	36	2.0

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY 16...	2.3	4	220	2.0	<.10	331	--	200	--	--	--
JUL 30...	2.5	4	250	1.3	.10	399	<.10	<10	72	<1	<10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 16...	--	190	47	--	140	140	--	--	--	--	--
JUL 30...	<1	600	24	5	570	540	<.1	5	<1	<1	11

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A8-A-C WITCHER CREEK NEAR CEDAR GROVE, WV

LOCATION.--Lat 38°16'23", long 81°24'43", Kanawha County, Hydrologic Unit 05050006, at head of Witcher Creek, and 3.0 mi northeast of Cedar Grove.

DRAINAGE AREA.--0.19 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning.

MINE HISTORY.--Contour mining was active in 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
03...	1245	.22	740	3.9	16.0	10.5	240	1.3	42	34	3.4
JUL											
18...	1430	.07	930	3.8	23.0	21.0	380	2.4	63	53	2.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)
MAY											
03...	6.8	340	2.3	.30	574	--	6900	--	--	--	--
JUL											
18...	8.5	480	3.4	.40	869	2.7	9000	140	<1	<10	67

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY										
03...	1300	1100	--	32000	13000	--	--	--	--	--
JUL										
18...	3400	2900	13	25000	25000	.1	700	5	2	1800

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A10-R-C BUFFLICK BRANCH NEAR CEDAR GROVE, WV

LOCATION.--Lat 38°15'58", long 81°24'25", Kanawha County, Hydrologic Unit 05050006, 2 mi upstream from mouth, and 3.0 mi northeast of Cedar Grove.

DRAINAGE AREA.--0.29 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning seam.

MINE HISTORY.--Contour mining active 1973-74.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 03...	1040	.32	197	4.5	11.0	11.0	71	.3	12	10	.90
JUL 18...	1305	.03	226	4.4	27.5	19.0	84	.3	14	12	1.0

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)
MAY 03...	2.8	78	2.0	.10	145	--	1300	--	--	--	--
JUL 18...	3.3	99	1.9	.20	199	.14	930	100	<1	<10	4

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 03...	170	23	--	1100	1100	--	--	--	--	--
JUL 18...	80	46	9	1600	1500	<.1	58	<1	2	140

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A7-R-Mt LYNCH FORK NEAR CANNELTON, WV

LOCATION.--Lat 38°12'36", long 81°15'41", Fayette County, Hydrologic Unit 05050006, 0.2 mi upstream from Smithers Creek, and 2.0 mi northeast of Cannelton.

DRAINAGE AREA.--0.39 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAMS MINED.--Upper Kittanning seam and Lower Kittanning seam.

MINE HISTORY.--Mountaintop mining active 1970-73.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 02...	1345	.80	860	8.1	17.5	13.5	480	350	72	73	2.7
JUL 18...	1015	.19	930	8.0	23.0	20.5	560	430	76	90	3.4

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY 02...	6.1	130	340	3.5	.10	727	--	<100	--	--	--
JUL 18...	6.9	130	420	2.5	.10	834	1.1	20	37	<1	<10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 02...	--	380	75	--	90	65	--	--	--	--	--
JUL 18...	1	180	35	10	30	26	.1	3	5	1	21

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A7-Base BULLPUSH FORK TRIBUTARY NEAR CANNELTON, WV

LOCATION.--Lat 38°13'19", long 81°17'32", Kanawha County, Hydrologic Unit 05050006, 1.9 mi upstream from mouth of Bullpush Fork, and 2 mi north of Cannelton.

DRAINAGE AREA.--0.23 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--None.

MINE HISTORY.--No mining done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 02...	1445	.26	83	6.8	18.0	11.0	33	24	5.7	4.5	.80
JUL 18...	1130	<.01	96	6.9	23.0	22.0	39	31	7.0	5.3	.90

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 02...	1.6	9	22	1.9	<.10	58	<100	80	9	10	<1
JUL 18...	2.0	8	23	2.2	<.10	75	100	110	7	10	4

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A6-R-Mt LITTLE CREEK TRIBUTARY 1 NEAR CHELYAN, WV

LOCATION.--Lat 38°11'27", 81°30'48", Kanawha County, Hydrologic Unit 05050006, 0.3 mi upstream from Little Creek, and 0.7 mi southwest of the Chelyan Interstate 77 interchange.

DRAINAGE AREA.--0.34 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning seam.

MINE HISTORY.--Mountaintop mining active 1979-80.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN											
11...	1310	.10	2840	3.3	31.0	22.0	1100	19	180	160	3.3
JUL											
19...	1105	.12	2100	3.4	23.5	19.0	980	13	160	140	2.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)
JUN											
11...	10	2100	1.8	.20	6920	--	100000	--	--	--	--
JUL											
19...	7.6	1300	2.1	.20	2320	1.1	100000	100	8	20	57

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JUN										
11...	7000	7400	--	100000	11000	--	--	--	--	--
JUL										
19...	3700	3300	30	76000	56000	.1	2100	1	1	3100

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

A3-A-Mt LITTLE CREEK TRIBUTARY 2 NEAR CHELYAN, WV

LOCATION.--Lat 38°10'13", long 81°31'52", Kanawha County Hydrologic Unit 05050006, at head of Little Creek, and 2.0 mi southwest of Chelyan.

DRAINAGE AREA.--0.09 mi^2.

FORMATION.--Allegheny Formation.

COAL SEAM MINED.--Lower Kittanning.

MINE HISTORY.--Mountaintop mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	ACIDITY (MG/L AS H)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
JUN												
11...	1110	<.01	310	7.0	26.0	26.0	140	120	--	23	19	2.2
JUL												
19...	0945	.03	998	3.6	17.0	18.0	360	--	2.6	57	53	2.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
JUN											
11...	6.1	13	140	2.3	.10	242	--	<100	--	--	--
JUL											
19...	8.5	--	470	2.4	.20	854	3.7	100	150	<1	<10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JUN											
11...	--	160	12	--	1100	1100	--	--	--	--	--
JUL											
19...	52	5900	5000	20	21000	21000	.1	700	4	2	1500

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

AK8-A-C LONG BRANCH NEAR MORRISVALE, WV

LOCATION.--Lat 38°07'34", long 81°53'30", Boone County, Hydrologic Unit 05050009, 0.1 mi upstream from Big Horse Creek, 1 mi southeast of Morrisvale, and 2.4 mi south of Woodville.

DRAINAGE AREA.--0.52 mi^2.

FORMATION.--Allegheny Formation and Kanawha Formation.

COAL SEAMS MINED.--Lower Kittanning seam to Middle Stockton seam.

MINE HISTORY.--Contour mining active 1980-83.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
APR											
30...	1240	.36	1500	6.7	26.0	17.0	910	820	150	130	8.7
JUL											
16...	1215	.16	1530	7.9	25.0	20.5	--	--	--	--	--
23...	1040	.10	1680	8.1	24.0	20.0	1000	860	170	140	12

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
APR											
30...	10	93	810	2.5	.10	1380	--	<100	--	--	--
JUL											
16...	--	130	--	--	--	--	--	--	--	--	--
23...	12	141	890	17	.10	1400	3.3	10	54	<1	10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR											
30...	--	200	7	--	1900	1800	--	--	--	--	--
JUL											
16...	--	--	--	--	--	--	--	--	--	--	--
23...	2	580	7	1	1500	1500	.5	35	3	<1	19

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

AK3-A-Mt BRAGG FORK NEAR MORRISVALE, WV

LOCATION.--Lat 38°06'42", long 81°53'24", Boone County, Hydrologic Unit 05050009, 0.1 mi upstream from Big Horse Creek, 1.5 mi southeast of Morrisvale, and 3.3 mi south of Woodville.

DRAINAGE AREA.--0.86 mi^2.

FORMATION.--Allegheny Formation and Kanawha Formation.

COAL SEAMS MINED.--Lower Kittanning seam to Middle Stockton seam.

MINE HISTORY.--Mountaintop mining active 1978-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
APR											
30...	1120	.68	1900	7.3	22.0	15.5	1000	850	180	140	17
JUL											
16...	1115	.31	1620	7.6	24.0	19.5	--	--	--	--	--
23...	0930	.18	1900	8.0	22.0	19.5	1200	930	200	160	22

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
APR											
30...	11	175	800	48	.10	1700	--	300	--	--	--
JUL											
16...	--	210	--	--	--	--	--	--	--	--	--
23...	13	230	930	34	.10	1700	3.1	30	36	<1	10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR											
30...	--	410	<3	--	1900	1800	--	--	--	--	--
JUL											
16...	--	--	--	--	--	--	--	--	--	--	--
23...	5	750	50	1	2100	1900	.5	26	4	<1	15

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

AK4-A-AMt TRACE FORK NEAR BARRETT, WV

LOCATION.--Lat 37°52'22", long 81°41'31", Boone County, Hydrologic Unit 05050009, 0.2 mi upstream from Cow Creek, and 1.4 mi southwest of Barrett.

DRAINAGE AREA.--0.20 mi^2.

FORMATIONS.--Allegheny Formation and Kanawha Formation.

COAL SEAMS MINED.--Coalburg seam, Stockton seam, and Lower Kittanning seam.

MINE HISTORY.--Area and mountaintop mining active 1982-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
14...	1220	.15	76	6.6	13.5	11.5	29	24	5.1	3.9	.90
JUL											
16...	1430	<.01	98	7.0	25.5	22.0	--	--	--	--	--
23...	1240	<.01	90	7.2	24.5	20.0	33	16	6.2	4.2	1.4

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
14...	1.9	5	20	2.0	<.10	60	200	190	20	20	6
JUL											
16...	--	14	--	--	--	--	--	--	--	--	--
23...	2.4	17	18	1.4	<.10	71	<100	270	45	40	54

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

AK4-Base RIGHT FORK TRACE FORK NEAR BARRETT, WV

LOCATION.--Lat 37°52'21", long 81°41'31", Boone County, Hydrologic Unit 05050009, 0.2 mi upstream from Cow Creek, and 1.4 mi southwest of Barrett.

DRAINAGE AREA.--0.15 mi^2.

FORMATION.--Allegheny Formation and Kanawha Formation

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
14...	1250	.10	32	6.3	14.0	11.0	15	12	2.8	1.9	.50
JUL											
16...	1435	<.01	57	6.4	25.5	19.0	--	--	--	--	--
23...	1245	<.01	60	6.7	24.5	18.0	21	10	4.3	2.6	.90

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
14...	1.1	3	13	2.0	<.10	16	200	190	9	10	<1
JUL											
16...	--	9	--	--	--	--	--	--	--	--	--
23...	1.7	11	14	1.0	<.10	44	<100	150	13	<10	16

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

K9-R-C BARN RUN AT COTTLE, WV

LOCATION.--Lat 38°21'20", long 80°38'04", Nicholas County, Hydrologic Unit 05050005, at Cottle, 0.6 mi upstream from Rockcamp Run, and 2 mi northeast of Craigsville.

DRAINAGE AREA.--0.33 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--Peerless seam and Eagle seam.

MINE HISTORY.--Contour mining active 1974-79.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 16...	1715	.36	83	6.4	16.0	16.0	33	28	6.3	4.1	.90
JUL 30...	1515	.03	110	7.2	24.5	24.0	46	25	9.2	5.5	2.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 16...	.90	5	30	1.0	<.10	33	100	740	51	420	410
JUL 30...	1.3	21	30	1.2	<.10	79	200	1200	220	450	290

Table 3.--Site information and water-quality data--continued

GUYANDOTTE RIVER BASIN

K11-Base SHARKEY BRANCH (UPPER) NEAR HAMPDEN, WV

LOCATION.--Lat 37°39'46", long 81°58'45", Mingo County, Hydrologic Unit 05070101, 1.4 mi upstream from mouth, and 2 mi northwest of Hampden.

DRAINAGE AREA.--0.12 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining was done above this sampling point.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
APR 30...	1620	.30	37	6.6	24.0	13.0	12	9	2.0	1.7	.70
JUL 17...	0850	<.01	45	6.3	20.0	18.0	15	7	3.0	1.9	.80

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
APR 30...	1.2	3	11	.70	<.10	30	100	150	10	<10	<1
JUL 17...	1.5	8	10	1.3	<.10	35	<100	210	56	130	140

Table 3.--Site information and water-quality data--continued

GUYANDOTTE RIVER BASIN

K11-R-C SHARKEY BRANCH (LOWER) NEAR HAMPDEN, WV

LOCATION.--Lat 37°38'56", long 81°58'03", Mingo County, Hydrologic Unit 05070101, at culvert under U.S. Route 52, and 1 mi northeast of Hampden.

DRAINAGE AREA.--1.56 mi^2.

FORMATION.--Kanawha Formation.

COAL SEAMS MINED.--Upper Cedar Grove seam and Lower Cedar Grove seam.

MINE HISTORY.--Contour mining active 1974-76, 1978-79.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
APR											
30...	1800	5.2	110	6.8	22.5	15.0	44	32	8.8	5.3	1.5
JUL											
17...	0720	.28	160	7.6	20.0	21.0	68	29	15	7.5	2.5
24...	0925	.08	170	7.7	23.5	20.0	72	31	16	7.9	2.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
APR											
30...	1.4	12	33	1.1	<.10	81	100	480	32	40	10
JUL											
17...	2.0	39	36	1.7	<.10	113	<100	210	31	40	9
24...	2.0	42	37	1.3	<.10	128	<100	160	8	10	3

Table 3.--Site information and water-quality data--continued

GUYANDOTTE RIVER BASIN

K12-U-C ADAMS FORK NEAR GILBERT, WV

LOCATION.--Lat 37°36'40", long 81°55'44", Mingo County, Hydrologic Unit 05070101, at culvert under WV County Route 10, 0.8 mi upstream from mouth and Gilbert Creek, and 2.5 mi west of Gilbert.

DRAINAGE AREA.--0.31 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAM MINED.--Chilton seam.

MINE HISTORY.--Contour mining active in late 1960's and early 1970's.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
01...	0845	.23	240	6.9	7.0	9.0	110	100	22	14	3.0
JUL											
17...	1105	.03	280	7.0	24.5	18.0	--	--	--	--	--
24...	1015	.02	280	7.0	22.5	17.5	120	99	24	15	3.8

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
01...	2.0	13	100	1.8	<.10	222	100	310	21	40	24
JUL											
17...	--	21	--	--	--	--	--	--	--	--	--
24...	2.6	23	100	2.9	<.10	240	100	480	130	110	120

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

K6-R-Mt WALNUT HOLLOW NEAR GILBERT, WV

LOCATION.--Lat 37°35'30", long 81°56'25", Mingo County, Hydrologic Unit 05070201, 0.1 mi upstream from Bear Creek, and 3.5 mi southwest of Gilbert.

DRAINAGE AREA.--0.12 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--Upper Cedar Grove seam, Lower Cedar Grove seam, Alma Rider seam, and Pond Creek seam.

MINE HISTORY.--Mountaintop mining active 1976-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
01...	1340	.07	1370	8.1	22.0	15.0	830	640	150	110	9.1
JUL											
17...	1140	.15	420	7.3	26.5	18.0	--	--	--	--	--
24...	1050	.01	1420	8.2	26.0	21.5	870	660	150	120	9.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY											
01...	5.5	190	670	.50	.10	1240	--	100	--	--	--
JUL											
17...	--	61	--	--	--	--	--	--	--	--	--
24...	5.5	208	640	1.3	.10	1110	2.2	30	60	<1	10

DATE	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY											
01...	--	40	6	--	110	90	--	--	--	--	--
JUL											
17...	--	--	--	--	--	--	--	--	--	--	--
24...	3	130	<3	1	130	120	<.1	2	7	<1	3

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

K5-A-Mt SAL GIBSON HOLLOW TRIBUTARY NEAR IAEGER, WV

LOCATION.--Lat 37°29'51", long 81°44'54", McDowell County, Hydrologic Unit 05070201, 1.3 mi upstream from Sandy Huff Branch, and 4 mi northeast of Iaeger.

DRAINAGE AREA.--0.12 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--Eagle seam, Matewan seam, and Bens Creek seam.

MINE HISTORY.--Mountaintop mining active 1982-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
01...	1740	.11	160	7.0	21.0	15.0	59	45	13	6.5	2.7
JUL											
17...	1440	.02	48	7.1	23.0	21.0	--	--	--	--	--
24...	1305	.01	410	7.5	25.0	20.0	180	160	41	20	5.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
01...	2.2	14	38	1.6	<.10	112	200	2400	34	70	4
JUL											
17...	--	27	--	--	--	--	--	--	--	--	--
24...	5.0	24	140	2.3	<.10	335	<100	990	13	30	10

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

K5-Base RIGHT FORK SANDY HUFF BRANCH TRIBUTARY NEAR IAEGER, WV

LOCATION.--Lat 37°29'10", long 81°44'16", McDowell County, Hydrologic Unit 05070201, 0.1 mi upstream from Right Fork Sandy Huff Branch, 2.3 mi upstream from Sandy Huff Branch, and 4 mi northeast of Iaeger.

DRAINAGE AREA.--0.28 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining has been done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
01...	1655	.44	60	6.6	22.0	13.5	22	15	4.6	2.5	2.8
JUL											
17...	1540	.01	102	7.0	24.0	22.0	--	--	--	--	--
24...	1410	<.01	105	7.1	27.0	22.0	35	16	7.7	3.8	3.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
01...	1.3	7	17	3.2	<.10	50	300	320	26	<10	4
JUL											
17...	--	18	--	--	--	--	--	--	--	--	--
24...	2.1	19	23	4.5	<.10	90	100	440	260	200	210

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

K7-A-CMt MUDDLETY CREEK TRIBUTARY AT SUMMERSVILLE, WV

LOCATION.--Lat 38°17'49", long 80°50'37", Nicholas County, Hydrologic Unit 05050005, 0.2 mi upstream and west of State Route 41, 1.0 mi upstream from Muddlety Creek, and 1 mi north of Summersville.

DRAINAGE AREA.--0.34 mi^2.

FORMATIONS.--Kanawha Formation.

COAL SEAMS MINED.--Peerless seam and Eagle seam.

MINE HISTORY.--Contour mining active 1981-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
16...	1330	.28	290	7.2	19.5	16.5	130	81	26	15	2.9
JUL											
30...	1240	.02	360	7.4	24.0	20.5	190	98	40	21	3.8

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
16...	2.9	46	78	2.0	<.10	222	<100	2300	10	2000	1800
JUL											
30...	3.7	89	110	3.5	.10	285	<100	2600	84	3600	3600

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

NR4-Base BEAR RUN TRIBUTARY NEAR RICHWOOD, WV

LOCATION.--Lat 38°10'39", long 80°21'52", Greenbrier County, Hydrologic Unit 05050005, 1.1 mi upstream from mouth of Bear Run, and 16 mi southeast of Richwood.

DRAINAGE AREA.--1.15 mi^2.

FORMATIONS.--New River Formation.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 23...	1110	.90	26	6.4	17.0	12.0	9	6	2.5	.64	.30
AUG 01...	1030	.34	22	5.3	22.0	14.5	6	4	1.4	.63	.30

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 23...	.40	3	5.2	.40	<.10	24	200	170	8	50	45
AUG 01...	.30	2	6.0	.70	<.10	18	<100	320	18	40	48

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

NR7-U-C ROCKY RUN TRIBUTARY NEAR RICHWOOD, WV

LOCATION.--Lat 38°10'05", long 80°23'19", Greenbrier County, Hydrologic Unit 05050005, 5.5 mi upstream from mouth and South Fork Cherry River, and 15 mi southeast of Richwood.

DRAINAGE AREA.--0.09 mi^2.

FORMATIONS.--New River Formation.

COAL SEAM MINED.--Sewell seam.

MINE HISTORY.--Contour mining active in the 1960's or 1970's.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 23...	0800	.09	94	7.4	14.5	12.5	41	16	6.0	6.3	.60
AUG 01...	0750	.04	98	7.6	17.0	15.0	42	14	6.3	6.5	.60

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 23...	1.4	25	19	.50	.10	64	200	930	12	200	4
AUG 01...	1.3	29	22	.70	.10	58	<100	520	20	50	3

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

NR4-U-Mt SOUTH FORK CHERRY RIVER TRIBUTARY NEAR RICHWOOD, WV

LOCATION.--Lat 38°08'59", long 80°22'58", Greenbrier County, Hydrologic Unit 05050005, 0.4 mi upstream from South Fork Cherry River, 1.9 mi upstream from Big Run, and 15 mi southeast of Richwood.

DRAINAGE AREA.--0.05 mi^2.

FORMATIONS.--New River Formation.

COAL SEAM MINED.--Sewell seam.

MINE HISTORY.--Mountaintop mining active 1976-78 and inactive until 1984, when reclamation was restarted.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 23...	1055	.10	580	6.7	19.0	17.0	280	210	44	41	2.0
AUG 01...	0930	.08	500	6.8	22.0	16.0	250	240	40	36	1.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 23...	5.7	70	280	.60	<.10	465	300	240	17	550	510
AUG 01...	5.6	6	240	1.1	<.10	411	<100	520	15	510	510

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

NR6-R-C SMOKEHOUSE BRANCH TRIBUTARY NEAR DUO, WV

LOCATION.--Lat 38°02'59", long 80°34'30", Greenbrier County, Hydrologic Unit 05050005, 0.6 mi upstream from Smokehouse Branch, 1.0 mi upstream from South Fork Big Clear Creek, and 2 mi southeast of Duo.

DRAINAGE AREA.--0.16 mi^2.

FORMATIONS.--New River Formation.

COAL SEAMS MINED.--Fire Creek seam and Beckley seam.

MINE HISTORY.--Contour mining active 1981-83.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
22...	1130	.11	270	7.4	22.5	17.0	120	95	23	14	1.7
JUL											
31...	1040	.12	240	7.7	24.0	18.0	120	74	25	13	1.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
22...	2.7	20	89	1.0	.10	217	100	260	12	100	62
JUL											
31...	2.6	42	79	1.2	.10	169	<100	200	23	610	430

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

NR2-R-Mt SOUTH FORK BIG CLEAR CREEK TRIBUTARY NEAR DUO, WV

LOCATION.--Lat 38°02'06", long 80°35'54", Greenbrier County, Hydrologic Unit 05050005, 0.3 mi upstream from South Fork Big Clear Creek, and 2.4 mi south of Duo.

DRAINAGE AREA.--0.10 mi^2.

FORMATIONS.--New River Formation.

COAL SEAMS MINED.--Fire Creek seam and Beckley seam.

MINE HISTORY.--Hountaintop mining active 1973-83.

380206080355401 - NR2-R-MT SOUTH FORK BIG CLEAR CR TRIB NR DUO WV
WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
22...	1025	.04	138	6.5	17.5	14.5	54	44	10	7.0	.90
JUL											
31...	0850	<.01	138	7.4	17.0	14.0	56	25	11	7.0	.90

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
22...	1.7	10	46	.80	<.10	116	300	300	47	890	850
JUL											
31...	1.5	31	32	1.0	<.10	94	<100	3200	620	2600	2700

Table 3.--Site information and water-quality data--continued

GUYANDOTTE RIVER BASIN

NR1-A-Mt INDIAN CREEK TRIBUTARY 1 NEAR WELCH, WV

LOCATION.--Lat 37°29'37", long 81°31'42", Wyoming County, Hydrologic Unit 05070101, 0.1 mi upstream from Indian Creek, 0.8 mi upstream from State Route 16, and 4.5 mi northeast of Welch.

DRAINAGE AREA.--0.13 mi^2.

FORMATIONS.--New River Formation.

COAL SEAM MINED.--Sewell seam.

MINE HISTORY.--Mountaintop mining active 1983-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
14...	1640	.13	110	6.9	15.0	12.5	40	24	8.9	4.4	2.8
JUL											
23...	1545	<.01	175	7.5	27.5	24.5	73	26	16	8.0	4.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
14...	2.1	16	22	2.0	<.10	74	200	980	160	520	490
JUL											
23...	3.3	47	38	1.9	<.10	135	<100	1200	240	550	530

Table 3.--Site information and water-quality data--continued

GUYANDOTTE RIVER BASIN

NR1-Base INDIAN CREEK TRIBUTARY 2 NEAR WELCH, WV

LOCATION.--Lat 37°29'01", long 81°31'11", Wyoming County, Hydrologic Unit 05070101, 100 ft upstream from Indian Creek, 1.9 mi upstream State Route 16, and 4.4 mi northeast of Welch.

DRAINAGE AREA.--0.40 mi^2.

FORMATIONS.--New River Formation.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
14...	1605	.51	30	6.9	15.0	13.0	8	5	1.6	1.0	1.1
JUL											
23...	1505	<.01	160	6.6	27.0	23.0	57	50	12	6.6	2.9

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
14...	1.2	3	6.7	2.0	<.10	16	100	220	26	20	3
JUL											
23...	4.0	7	12	1.3	<.10	122	<100	490	18	20	23

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

NR3-R-Mt ELKHORN CREEK TRIBUTARY AT WELCH, WV

LOCATION.--Lat 37°25'45", long 81°34'02", McDowell County, Hydrologic Unit 05070201, 0.1 mi southeast of Stevens Clinic Hospital, and 0.2 mi upstream from mouth and Elkhorn Creek.

DRAINAGE AREA.--0.63 mi^2.

FORMATION.--New River Formation.

PERIOD OF RECORD.--Operated as a continuous record gaging station (03212703) October 1980 to September 1982.

COAL SEAMS MINED.--Sewell seam and Welch seam.

MINE HISTORY.--Mountaintop and contour mining active 1978-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 15...	1625	.69	770	7.9	17.0	12.0	290	180	70	29	43
JUL 23...	1635	<.01	810	8.0	25.0	20.5	300	150	72	28	74

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 15...	2.3	110	280	3.0	.10	611	<100	330	6	20	9
JUL 23...	2.9	150	310	.50	<.10	678	<100	200	8	<10	9

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

P4-R-C RADER RUN (LOWER) NEAR RUPERT, WV

LOCATION.--Lat 37°58'41", long 80°36'51", Greenbrier County, Hydrologic Unit 05050005, 1.7 mi upstream from mouth and Little Clear Creek, and 4 mi northeast of Rupert.

DRAINAGE AREA.--0.46 mi^2.

FORMATION.--Pocahontas Formation.

COAL SEAM MINED.--Pocahontas No. 6 seam.

MINE HISTORY.--Contour mining active 1982-83.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
22...	1430	.28	56	7.1	25.0	11.0	22	11	5.3	2.1	.80
JUL											
31...	1310	.03	80	7.6	24.0	16.5	33	10	8.5	2.8	1.0

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
22...	.90	11	14	.70	<.10	42	100	490	23	20	2
JUL											
31...	1.0	23	15	1.0	<.10	52	<100	880	18	20	17

Table 3.--Site information and water-quality data--continued

KANAWHA RIVER BASIN

P4-Base RADER RUN (UPPER) NEAR RUPERT, WV

LOCATION.--Lat 37°58'36", long 80°36'15", Greenbrier County, Hydrologic Unit 05050005, 2.3 mi upstream from mouth and Little Clear Creek, and 4.5 mi northeast of Rupert.

DRAINAGE AREA.--0.11 mi^2.

FORMATIONS.--Pocahontas Formation.

COAL SEAMS MINED.--None.

MINE HISTORY.--No mining done in this area.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 22...	1405	.12	20	7.0	25.0	11.0	6	3	1.3	.72	.30
JUL 31...	1250	.03	19	7.1	23.0	15.0	7	1	1.5	.81	.30

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 22...	.50	3	2.0	.70	<.10	19	100	310	22	20	4
JUL 31...	.40	6	2.2	.80	<.10	15	<100	550	21	40	6

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

P3-A-C DAUSS FORK NEAR FILBERT, WV

LOCATION.--Lat 37°17'49", long 81°31'57", McDowell County, Hydrologic Unit 05070201, 0.9 mi upstream from mouth and Long Branch, and 1.5 mi southeast of Filbert.

DRAINAGE AREA.--0.17 mi^2.

FORMATIONS.--Pocahontas Formation.

COAL SEAMS MINED.--Pocahontas No. 4 seam and Pocahontas No. 3 seam.

MINE HISTORY.--Contour mining active 1972-75, 1980-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 15...	0920	.11	740	7.6	17.0	10.0	370	270	72	45	6.9
JUL 25...	0920	.04	778	7.7	22.0	14.5	420	300	82	52	8.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 15...	5.4	91	59	2.0	.10	601	100	980	27	540	500
JUL 25...	5.6	120	310	.40	<.10	689	<100	490	73	370	360

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

P5-R-C LONG BRANCH TRIBUTARY NEAR FILBERT, WV

LOCATION.--Lat 37°17'22", long 81°33'25" McDowell County, Hydrologic Unit 05070201, 0.3 mi upstream from Long Branch, and 2.0 mi southwest of Filbert.

DRAINAGE AREA.--0.02 mi^2.

FORMATIONS.--Pocahontas Formation.

COAL SEAMS MINED.--Pocahontas No. 3 seam.

MINE HISTORY.--Contour minig active 1976-77.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY 15...	1115	.04	1020	7.1	20.0	16.0	570	470	100	77	8.2
JUL 25...	1045	.00	--	--	--	--	--	--	--	--	--

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY 15...	5.6	93	420	1.0	.20	829	<100	370	33	310	310
JUL 25...	--	--	--	--	--	--	--	--	--	--	--

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

P2-R-Mt SOUTH FORK TUG FORK TRIBUTARY NEAR SKYGUSTY, WV

LOCATION.--Lat 37°16'42", long 81°29'10", McDowell County, Hydrologic Unit 05070201, 0.4 mi upstream from mouth and South Fork Tug Fork, and 3.1 mi south of Skygusty.

DRAINAGE AREA.--0.03 mi^2.

FORMATIONS.--Pocahontas Formation.

COAL SEAMS MINED.--Pocahontas No. 4 seam and Pocahontas No. 5 seam.

MINE HISTORY.--Mountaintop mining active 1978-81. Flow may be influenced by seepage from deep mine.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
15...	1330	.10	1140	7.0	17.0	16.0	620	530	120	77	12
JUL											
25...	1215	.04	1360	7.2	25.5	24.5	790	660	150	100	14

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
15...	5.1	86	490	2.0	.10	1040	<100	190	19	130	73
JUL											
25...	5.3	130	790	1.6	.10	1270	<100	190	11	110	35

Table 3.--Site information and water-quality data--continued

BIG SANDY RIVER BASIN

P1-A-Mt FREEMAN BRANCH NEAR SKYGUSTY, WV

LOCATION.--Lat 37°16'38", long 81°29'28", McDowell County, Hydrologic Unit 05070201, 0.5 mi upstream from mouth and South Fork Tug Fork, and 3.1 mi southeast of Skygusty.

DRAINAGE AREA.--0.23 mi^2.

FORMATIONS.--Pocahontas Formation.

COAL SEAMS MINED.--Pocahontas No. 4 seam and Pocahontas No. 5 seam.

MINE HISTORY.--Mountaintop and contour mining active 1978-84.

WATER QUALITY DATA, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
MAY											
15...	1405	.32	750	7.4	17.0	14.0	370	350	71	48	7.7
JUL											
25...	1305	.03	690	7.6	25.0	19.0	360	320	65	47	8.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAY											
15...	4.8	27	360	2.0	.20	624	<100	460	60	520	560
JUL											
25...	5.0	33	340	.30	<.10	603	<100	150	5	10	2